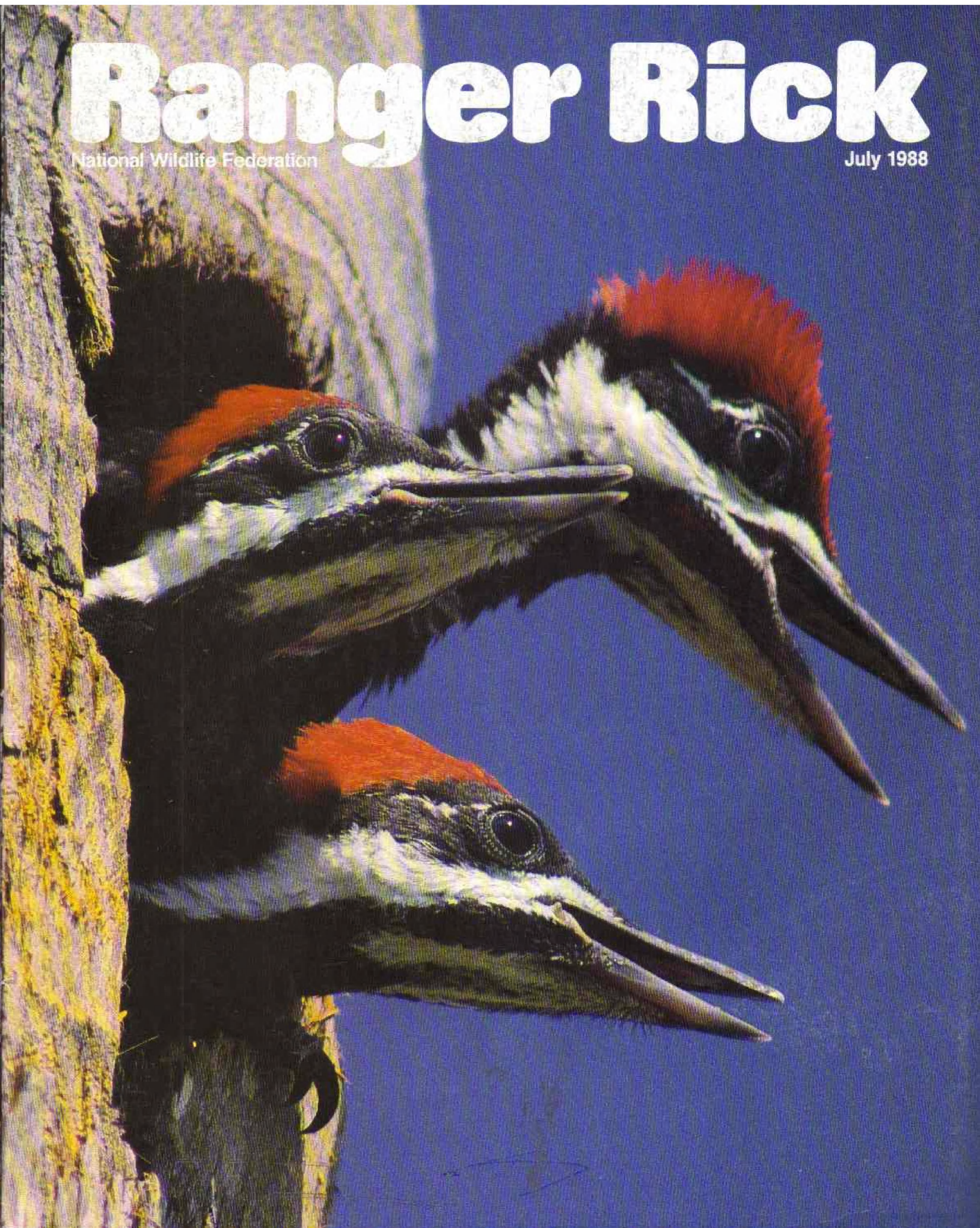


Ranger Rick

National Wildlife Federation

July 1988



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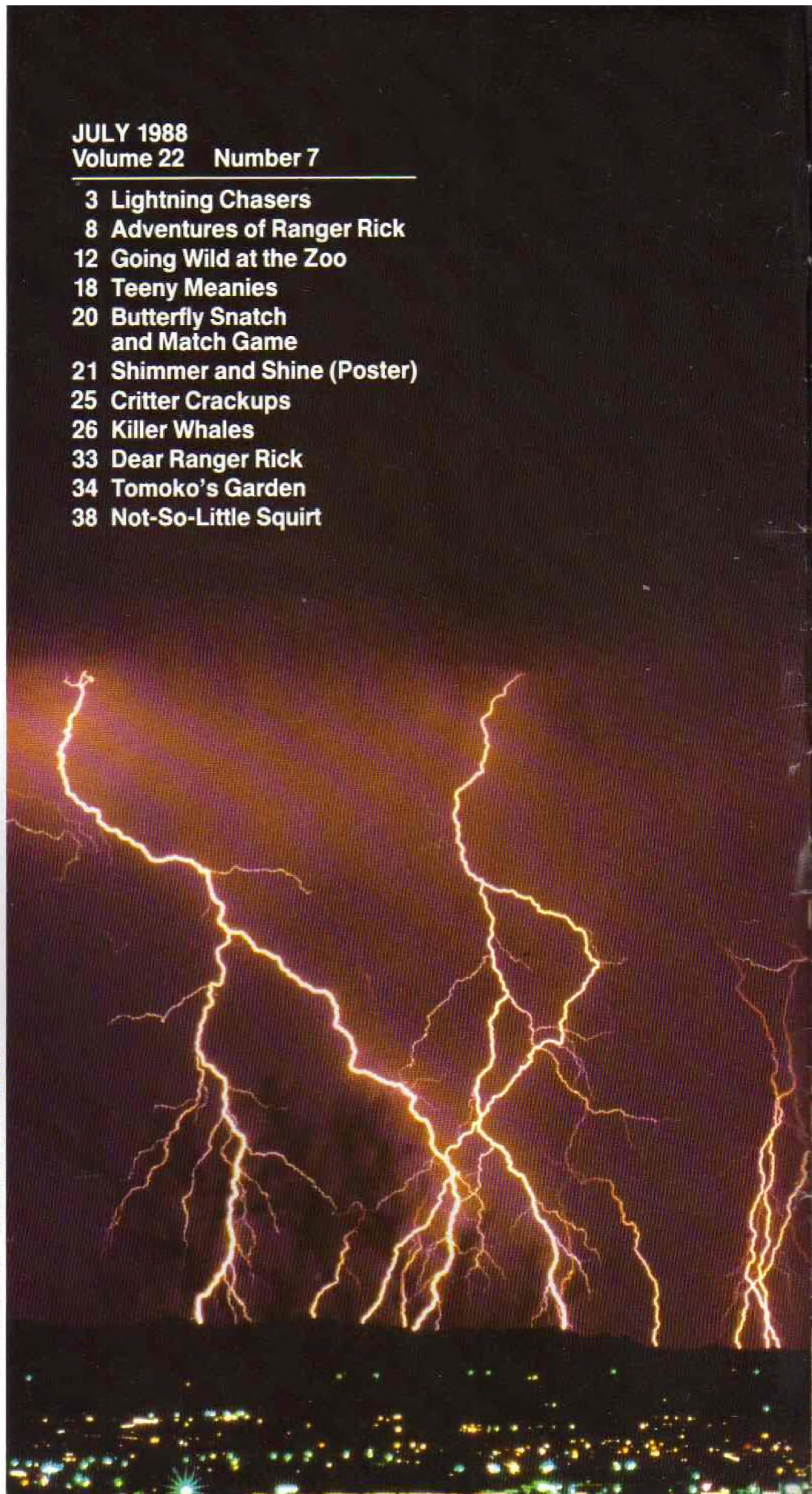
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LIGHTNING CHASERS

When lightning is flashing, two daring people dash into action. To meet them, turn the page.



Most people stay safely indoors when lightning is flashing in the sky. But in Tucson, Arizona, two people *chase* lightning on summer nights. When they see a big thunderstorm brewing, they often head for the highest mountains in the area.

MEET "FLASH"

"Flash" is one of those daring lightning chasers. He's Tom Ives, the photographer who took the pictures on these pages. Whenever he sees that a storm is coming up, he grabs his cameras and heads for the action.

Tucson is the perfect place for Tom to live—or for anyone who likes to watch lightning. It has some of the most spectacular lightning storms that you can see anywhere in the United States. (The photo on pages 2 and 3 shows the number of lightning bolts that struck Tucson during four

minutes of one *wild* storm.)

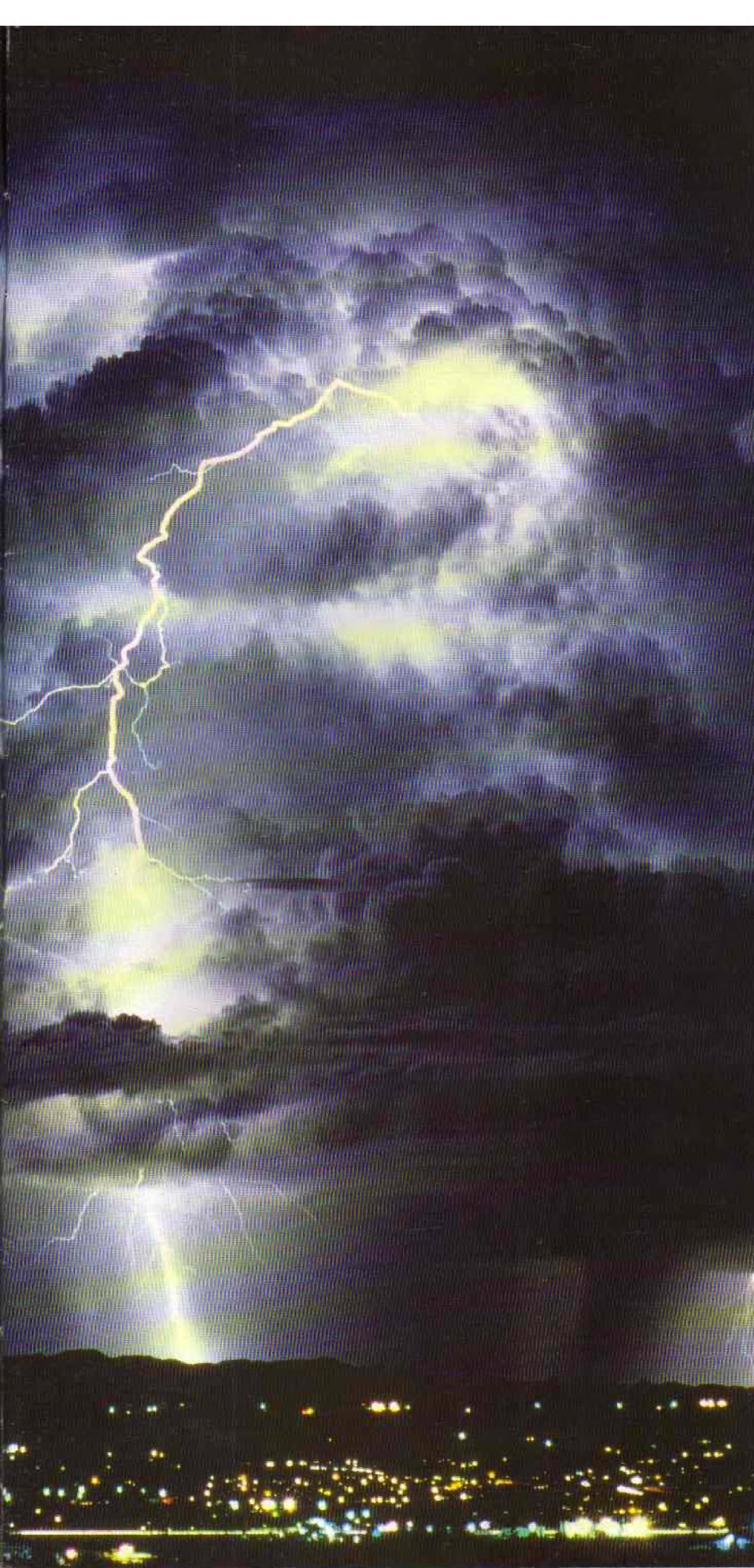
Tucson is in the desert of southern Arizona, where the air is super-clear and super-dry. Everything, including lightning, looks sharper than in most other places.

Thunderclouds in Tucson are often much higher in the sky than clouds in most other areas. So lightning that travels between clouds and the ground is often very long and easy to see.

Tom watches the sky as the sun goes down each day. If he sees a good storm building, he stops whatever he's doing—even eating dinner! And then he's off photographing the lightning until the early morning hours.

"Flash" had to work fast to get this picture: As a giant bolt zapped to the ground, another bolt flashed to the left, high in the cloud.





When lightning is around, it's very dangerous to be outside. So Tom takes many of his pictures from inside his house. But for the best view of the lightning, he'll head for the mountains that overlook the city. There he works from inside his van, where he knows he'll be safer. After all, he wants to take photographs, not get zapped! At home he takes most of his pictures from an open window. In the van he aims his camera out the sliding side door or one of the windows.

Tom knows how to stay out of lightning's way. But he is always amazed at the chances other people take. He wishes more people knew how dangerous lightning can be and how to stay safe. (Please be sure to read the lightning safety tips at the end of this story.)

MEET "DR. LIGHTNING"

Tom has a friend he calls "Dr. Lightning" who also chases lightning. But his real name is Philip Krider, and he's a lightning scientist. On a stormy summer night, Dr. Krider is often perched on a mountain north of Tucson. There he watches and studies lightning as it flashes across the sky. But he also chases lightning in other parts of the world.



Like most lightning, these bolts (above) never struck ground. But when lightning does strike, it can kill. Luckily, no one was on this mountaintop when this super-sized bolt (left) hit.

The place he goes most often is the Kennedy Space Center, near Cape Canaveral, Florida. He and other scientists are studying how to predict which storm clouds will produce lightning. This will help Space Center scientists decide if it's OK to launch a rocket when storms are near.

To study the lightning, the scientists set up special research instruments that send information back to an old school bus. Dr. Krider and his crew wait in the bus, where they are safe from the storm. The instruments tell them how bright the lightning was,

how powerful, and how hot.

Dr. Krider and the other scientists are learning more about lightning every day. They hope to find new ways to protect everything—not just rockets—that can be damaged by lightning. Dr. Krider and his co-workers have already invented instruments that can tell forest rangers exactly where and when lightning has struck the ground. This helps them predict where forest fires might break out.

But there's a *lot* about lightning that we still don't know. So that's why on a stormy summer night you might find Dr. Krider on a mountain near Tucson, watching and studying lightning. And somewhere nearby you'll probably find his friend Tom taking photos of the flashes in the sky.

HOT FACTS ABOUT LIGHTNING

- Lightning travels so fast that if one bolt could travel around the earth, it would circle the equator more than twice in one second.
- A bolt of lightning can be five times hotter than the surface of the sun.
- Astronauts have seen lightning from space. They've spotted lightning bolts that stretched over 100 miles (160 km) across the sky.
- Over 200 bolts strike the earth each second.
- In a single storm, lightning can strike over 5000 times.
- Most lightning never touches the ground—it usually travels from one part of the cloud to another.
- Lightning can strike the ground more than five miles (8 km) away from the storm.

DR. LIGHTNING'S SAFETY TIPS

If you're outside:

- Run for shelter (house, other building, car) as soon as you see a storm forming or hear thunder, but do not get into a small shed or tent that's in an open area.
- Stay away from tall objects such as trees, telephone poles, and boat masts.
- Get off of and away from a horse, bicycle, or anything else you may be riding.
- If possible, get out of and away from water.
- If you're caught in the open, squat with your knees tucked together. (*Do not lie on the ground!*)
- If you're in a boat and can't get to shore, squat down or get below deck if possible.
- Get away from any metal objects, such as traffic signs, posts, and fences.
- If you're with a group of people, make sure that you get at least 30 feet (9 m) away from one another.

If you're inside:

- Don't stand or sit next to doors or windows.
- Turn off computers, radios, stereos, TVs, etc.
- Don't use the telephone, take a bath or shower, or wash something in the sink.

Follow these tips and you should have little to worry about. *And you can still enjoy the show!* 🐼



Adventures of Ranger Rick

by Lee Stowell Cullen; drawings by Alton Langford

"Crunch, crunch. Munch, munch!" said Scarlett Fox. "I declare, Rick, by the time we leave Ohio, you and Sammy are goin' to look like a couple of fat ol' hogs!"

Boomer Badger watched Sammy Squirrel and Ranger Rick Raccoon as each gobbled a fresh ear of corn. "Hey, leave some of that for me!" Boomer said.

"You can pick some corn as we move along, Boomer," said Rick. "I think we're in for a storm. And I'd like to find someplace to spend the night before we get soaked."

"What about Tawny?" asked Scarlett.

Tawny was a barn owl Rick had met a few years ago. Rick and the gang had come to the Midwest to visit her. They had heard that barn owls were having trouble, so they wanted to see how Tawny was doing.

"We can get to the old church steeple where Tawny lives tomorrow," said Rick, looking at the sky. "But now let's find shelter."

"I'll climb this tree and look around," said Sammy, scrambling up a tall pine.

A few seconds later Sammy called down to Rick and the others. "There's a sort of barn a short way up ahead."

"A *sort of* barn?" asked Rick. "What does *that* mean?"

"Well, it's kind of tipping over to one side," said Sammy. "But it has a roof."

"A roof—big deal," grumbled Boomer. "It sounds like a terrible place to spend a stormy night."

"Good grief, Boomer, don't be such a

grouch," said Scarlett. Then, feeling a bit sorry she'd scolded the badger, she patted his back and said, "Come on, I'll race you to the barn."

"We'd *all* better hurry," said Rick as lightning flashed and thunder rumbled in the distance.

It had started to rain by the time the friends reached the old barn. "Boy, it's spooky in here," moaned Sammy as he walked through an open door. "I don't like it." Then he jumped. "Yow! The roof leaks. I'm getting *wet!*"

"Come over here and make a bed where it's dry, Sammy," said Scarlett to her little friend. "And don't worry—the storm won't last forever," she added, yawning.

In just a few minutes Rick and Scarlett were sound asleep. Soon Boomer closed his eyes and began to snore. Sammy had curled up near Scarlett, but he was still wide awake. Every time the thunder roared, he jumped.

"Boy, no sleep for me tonight," he muttered.

Several hours later the storm died down. Sammy was just about to drift off to sleep when he saw it—a blur of white floating silently toward him. As quickly as it appeared, it disappeared. Sammy reached out to wake Scarlett, but he shook Boomer by mistake.

"Huh? What's wrong?" Boomer asked.

"A *ghost*," whispered Sammy. "Look out! Here it comes again!"

The white blur headed for Sammy and Boomer. Just as it started to skim over their heads, the "ghost" let out a terrifying screech.

"This place is haunted!" cried Boomer, trying frantically to dig right through the wooden

floor. "I'm getting out of here!"

The screech woke Rick and Scarlett. "Who's makin' all that noise?" Scarlett asked.

"A ghost!" cried Boomer.

"A screamin' demon," cried Sammy. "Look!"

Again the white blur appeared. It circled silently over Rick's head, then landed right next to him.

"An owl," said Sammy in a small voice.

The owl laughed. "Sorry I scared you. I'm Tawny, and I was just having a little fun. Pretty good screech, eh, Rick?"



"No more screeches!" yelled Boomer, who was still trying to dig through the floor.

"Cut that out and come here, Boomer," said Rick. "I want you to meet my old friend." Then Rick turned and introduced the others. "This is Scarlett, and over there is Sammy."

"Stop shaking, Sammy," said Tawny kindly. "I promise, no more scary stuff."

When the animals had settled down, Rick turned to the owl. "Gee, Tawny, the last time I saw you, you were living in a church steeple in town. Now we find you here. Are you living in this old barn?"

Tawny explained why she was in the tumble-down building. Her old home in town was still standing. But people had put screens over all the steeple's openings to keep pesky pigeons out. That did the job. But it kept the owls out as well. Now there was no way for Tawny to get into the steeple, so she had to move.

"But, Tawny," said Scarlett, "this place seems just fine. So why worry?"

"Well, I don't have to worry for a while," answered Tawny, "but this old barn isn't going to be standing much longer."

"It's not going to fall on us, is it?" asked Boomer as he looked around nervously.

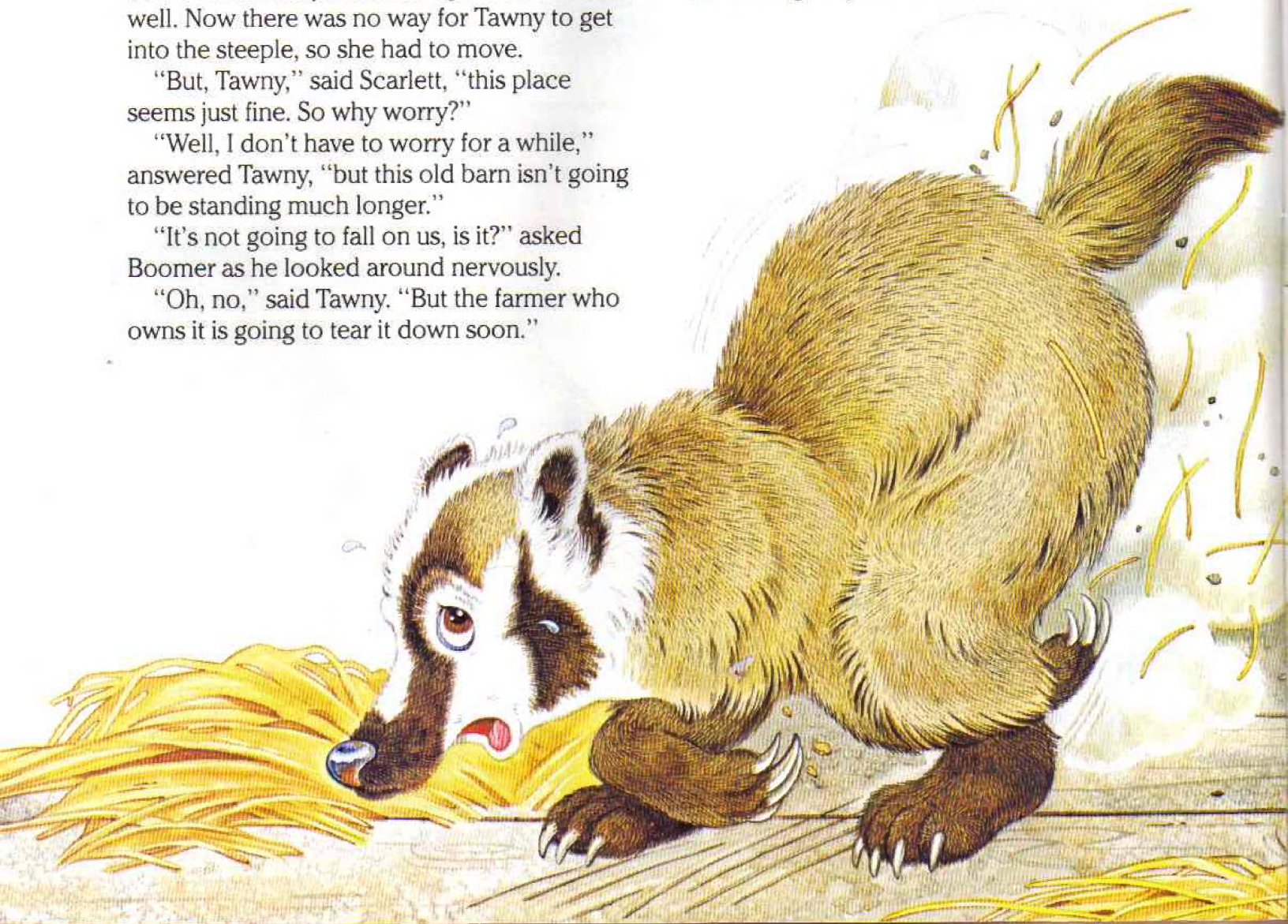
"Oh, no," said Tawny. "But the farmer who owns it is going to tear it down soon."

"Maybe you could use something else for a home," said Rick. "The farmer must have an old shed around. Or maybe there are some old hollow trees nearby."

Tawny shook her head. "No, Rick. This farmer's done what many others have: He's replaced his old wooden buildings with new metal ones that we owls can't get into. And he's cut down most of his trees to make room for more crops."

"Sounds like a bad deal," said Sammy.

"But that's not all," continued Tawny. "You see, we barn owls eat mostly meadow voles—little animals the size of mice. These voles need fields of high grass to live in. But most of the farmers around here plant crops in almost all of their fields, year after year. That means there are fewer grassy fields—and fewer voles for us





owls to catch and eat."

"Don't those farmers care what happens to the owls?" asked Boomer.

"Oh, it's not that at all," answered Tawny. "The farmers are just trying to make a living like anybody else. And many of them don't even know we're having trouble."

"Then how can we help you?" asked Rick.

"Just pass the word about us," answered Tawny. "Maybe more farmers will think about barn owls and let grass grow in some of their fields. And maybe more will leave a few old trees standing. We really *do* need places to find food and shelter and to raise our families."

Scarlett looked at Rick, then at the owl. "Seems to me there is still another way to help you, Tawny," she said.

"I know just what you're thinking, Scarlett," said Rick. "Listen, Tawny, my rangers will have to leave it up to grown-ups to help you find more food. But they *can* get busy and build nesting boxes for you! The kids can hang them in meadows and orchards. They can put them up everywhere they think barn owls may be able to use them."

"That would be wonderful!" said Tawny.

"The boxes would be warm and strong," said Scarlett.

"And they wouldn't leak," squeaked Sammy.

"But wouldn't they be kind of dark inside?" asked Boomer.

"Sure," said Rick with a grin, "but dark places are just perfect for spooky owls to hide in. Right, Tawny?"

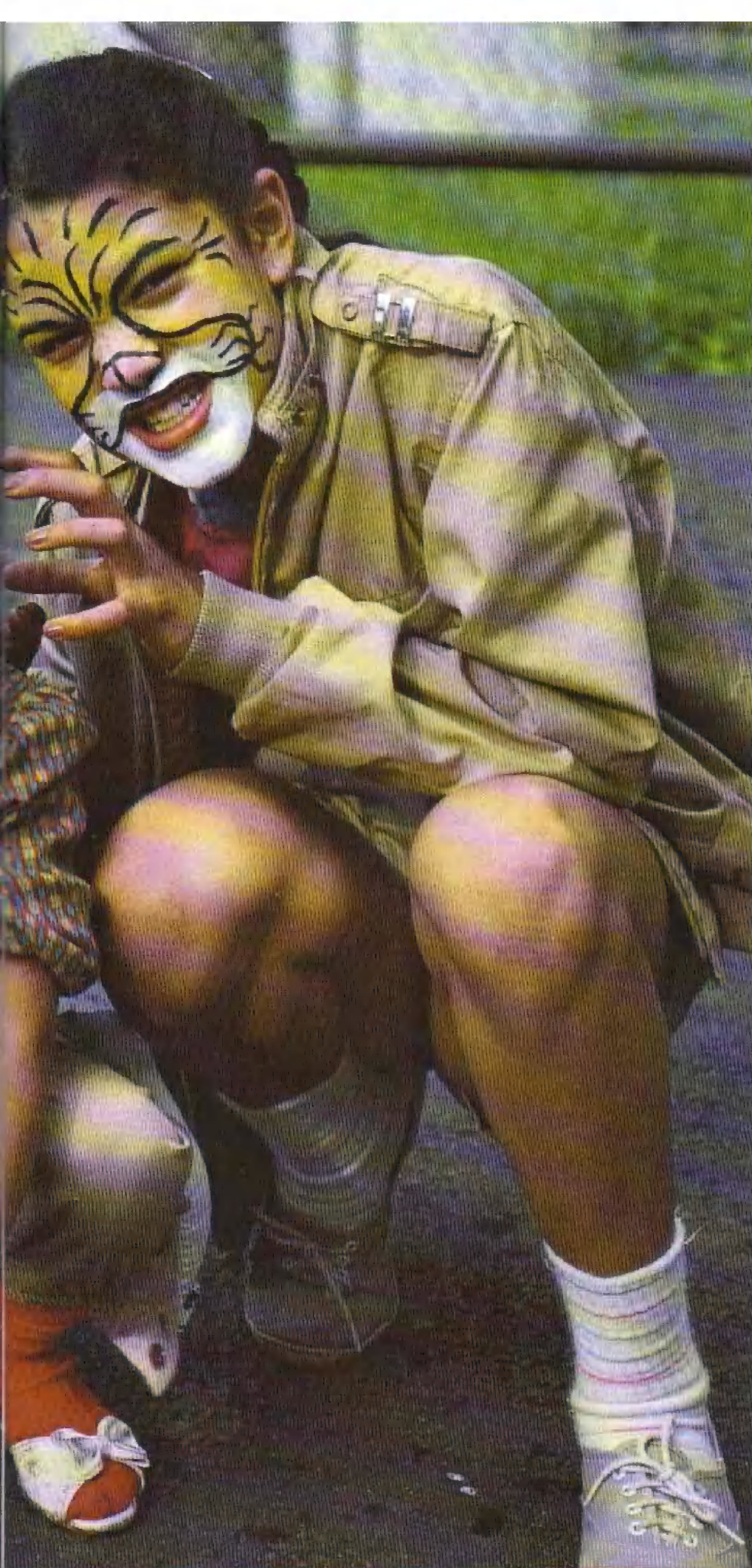
"Right," said Tawny as she slowly closed one shiny dark eye in a wink. 🦉



Rangers: You don't have to live in the Midwest to help barn owls. These birds of prey live in most parts of the United States, and many need nesting boxes. For free instructions on how to build an owl box, write to Owl Boxes; Dept. ON; National Wildlife Federation; 8925 Leesburg Pike; Vienna, VA 22184-0001. Please include your name and address.

R.R.





Going Wild at the Zoo

by Mary Parker
photos by Jessie Cohen, National Zoo

Are these two “leopards” about to have “raccoon” stew for dinner? Not a chance! They’re just kids having fun looking like animals at the zoo. To find out more, turn the page.



Guests at the National Zoo had their faces painted to look like a panda (1), a baboon (2), and even a skunk (3). All they needed was a little help from a friend (right).



Lucky kids can "go wild" for a night at the National Zoo in Washington, D.C. Once each summer, a group called Friends of the National Zoo throws a big party for its members. There's plenty of popcorn and soda for everyone. Zoo keepers even bring out some animals for the kids to meet up close. Best of all, kids can pretend to be wild animals for a night.

As soon as they arrive for "Zoo Night," most kids head for the face painters. Forty or more adults are waiting, armed with face paint and brushes. They're ready to turn hundreds of kids into wild animals!

"It takes only five minutes to have your face painted," says Nathan Mulcahy. (He's the "tiger" on pages 16 and 17.) "But you have to wait in line a long time. It's worth it, though, because once your face is painted, the zoo seems like a different place. Suddenly you

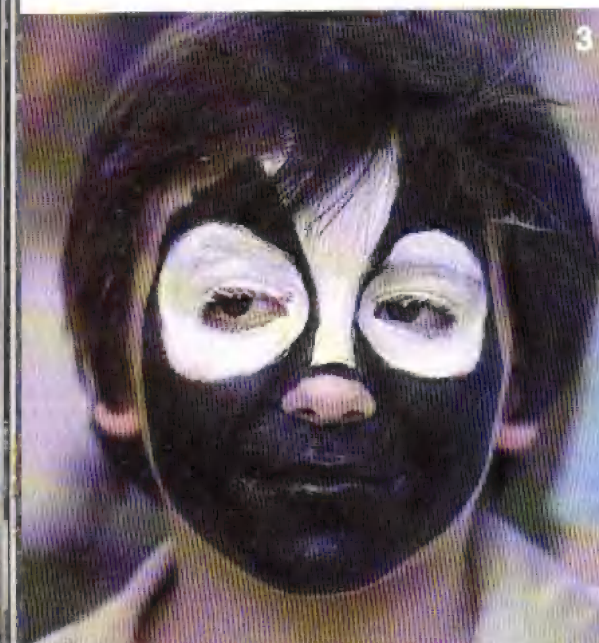
can pretend to be an animal too! You can stalk around the sidewalks and roar at anyone who gets too close. People come up and snap your picture. And other 'animals' slide up to check you out. I totally forget I'm a *person*—I really feel like a tiger!"

You don't have to be a member of the Friends of the National Zoo to go wild. You and a friend can paint each other's faces. Read on to find out how you can turn into a tiger. And then you can go wild at *any* zoo!

TURN INTO A TIGER!

You'll need face paint (sold in dance, costume, and theater supply stores) or colored zinc oxide (sold in drug and grocery stores) in white, yellow, orange, pink, and black. You'll also need cold cream to remove face paint.

To begin, hold your hair away from your face with a







scarf or headband. Then put cold cream on your face and wipe it off. (This will make cleanup easier.)

Now for the face paint:

Apply white for eyes and around mouth (1). Rub yellow over the rest of your face and blend in dabs of orange to get a golden fur color (2). Use a brush or makeup crayon to draw thick stripes on your forehead and at eye corners

(3 & 4). Dab on pink for your nose (5), and draw thin stripes for whiskers (6). Add teeth (right), and all you have to do is roar!

When you're tired of being a tiger, wipe off the makeup with cold cream and tissues. (Zinc oxide washes off with soap and water.) And remember, you can become a different animal each time you get that wild feeling! 🐅



They're famous for hovering like helicopters, but here's a secret many people don't know: Hummingbirds can be

Teeny Meanies

by Lola Oberman

Hummingbirds can be tough little critters. That's one of the things that make them so much fun to watch! A female hummingbird will defend the area around her nest. And both male and female hummingbirds are ferocious when it comes to defending the places where they find food. They will fight with birds and other animals much bigger than they are!

The hummers I see near my house in Maryland are all ruby-throated hummingbirds. But I've also seen lots of other kinds in the West—and they're all teeny meanies! Here are some notes I wrote in my diary last year about them:

MAY 17 It was pure luck that I found my first hummingbird nest of the year today. I'd stopped to watch a robin singing in a maple tree. Suddenly a female ruby-throated hummingbird zoomed into sight. The next second, she stabbed the robin in the back! I figured she must have had a nest nearby. The startled robin quit singing in mid-song and flew off.

I followed the quick flight of the hummingbird with my binoculars. Then I saw her settle

down on a nest the size of a walnut shell. It was the same color as the bark of the tree and hard to see. I would never have found the nest if I hadn't stopped to look at the robin.

MAY 20 I had a note today from a friend in Arizona. Blue-throated hummingbirds come to her feeder every day. "They're beautiful," she writes, "but so quarrelsome! The fights around the feeder are unbelievable. Today the battle got so rough that one bird fell to the ground. It lay there stunned for a second. But then it woke up and fought harder than ever."

JUNE 10 Two ruby-throated hummingbirds, a male and a female, visit the red flowers in our garden nearly every day now. Maybe they're the pair with the nest in the maple tree nearby. Usually they come one at a time and chase away the bees and butterflies. But if they happen to come together, they always fight with each other. When one hummingbird chooses a flower to feed on, the other one wants it too!



JUNE 29 I talked to my brother in California tonight. He says rufous (ROO-fus) hummingbirds are the greatest fighters of all. They chase all the big blackbirds out of his garden. And he even saw one swoop down and attack a chipmunk. The chipmunk squeaked in terror and scurried into a hole!

JULY 12 Now we have four hummers feeding on the pink blossoms in our mimosa tree nearly every day. It is a pretty sight, but it's not peaceful! The male still comes alone, but the female has two more birds with her. They are about the same size and color as she is. I'm not sure, but I think they're her young.

All four of the birds like playing the "I got here first" pecking game. If two of them are youngsters, they must have learned to defend themselves at a very early age!

JULY 20 We're enjoying our visit with friends in Colorado. They have broad-tailed hummingbirds here that fight just as much as our ruby-throated hummingbirds back in Maryland. Out on the deck they come swarming to a hummingbird feeder full of sugar water.

As I stood watching them, I heard a zinging sound. A male rufous hummingbird had suddenly appeared. He put on a real Superbird performance, knocking the broadtails off the feeder one at a time. I think my brother was right when he said the rufous hummingbird is the most ferocious of all.

AUGUST 1 Back from our Colorado trip, we found the blooms all gone from the mimosa tree. There were no hummingbirds in sight. But when we put out our sugar-water feeder, four of them appeared like magic. How they fought over the sugar water—as if there weren't enough for all of them!

OCTOBER 4 I'm in Cape May, New Jersey, and this is a great place to watch birds flying south for the winter. This morning hundreds of hawks flew overhead. They were all flying low, looking for small birds to eat for breakfast.

I turned my binoculars on a sharp-shinned hawk overhead. Suddenly I saw a hummingbird above and behind it. As I watched, the little bird dropped downward like a fighter plane. Then it stabbed the hawk in the back!

In an instant the hummingbird darted upward. It was out of sight before the hawk could recover from its shock.

I know that the tiny hummingbird has a long flight ahead of it. It may fly 3000 miles [4800 km] to its winter home in Central America. There will be many dangers along the way. But I'm betting that this teeny meany will make it! 🐱

Rangers: Want to invite hummingbirds to your backyard? Write for a free copy of "Calling All Hummers"; Dept. HB; National Wildlife Federation; 8925 Leesburg Pike; Vienna, VA 22184-0001. Please include your name and address. R.R.

Drawings by Sharron O'Neil





Butterfly Snatch and Match Game

You don't have to grab a net and sprout wings to play this butterfly name game. Just "snatch" each of the numbered clues and match them to a real butterfly name at far right. Each silly clue tells what the butterfly might do if its name came true.

- | | | |
|--|---|--|
| <ol style="list-style-type: none"> 1. It would sit on a throne. 2. It could be made into coleslaw. 3. It could come at the end of a sentence. | <ol style="list-style-type: none"> 4. It might be good at fetching sticks. 5. It would be the captain of a boat. 6. It would belong at one end of a pig. 7. It could help a feathered animal fly. 8. It might be found in the middle of a sentence. 9. It might have been shot into the mud. 10. It could gobble up its wagging end. 11. It could work in a restaurant. 12. It would grow on a tree. | <ol style="list-style-type: none"> a. SNOUT b. QUESTION MARK c. ORANGE d. QUEEN e. BROWN BULLET f. CABBAGE g. SKIPPER h. COMMA i. DOGFACE j. BIRDWING k. SWALLOWTAIL l. WAITER |
|--|---|--|

Answers:

1. d, 2. f, 3. b, 4. i, 5. g, 6. a, 7. j, 8. h, 9. e, 10. k, 11. i, 12. c

SHIMMER AND SHINE



by Betty Blair

I love butterflies! There are thousands of kinds of these beautiful creatures. And they come in more different colors than any other kind of animal.

One of my favorites is the swallowtail butterfly (see photo at top). A close-up photo (middle) shows its patterns of color. And an even closer shot (bottom) reveals that the patterns of color are made by tiny scales. Each scale is about as wide as a grain of salt. There are thousands of scales, and they overlap each other like shingles on a roof.

Butterfly scales come in every color you can imagine. Yellow, brown, black, and red colors come from pigments, or chemicals, in the scales. (You can see these colors in the buckeye butterfly on the next two pages.) Gold, silver, shimmery green, and superbright blue are caused by light bouncing off the surface of the scales. Tiny grooves on these scales "break up" light into different colors.

(Continued on page 24)



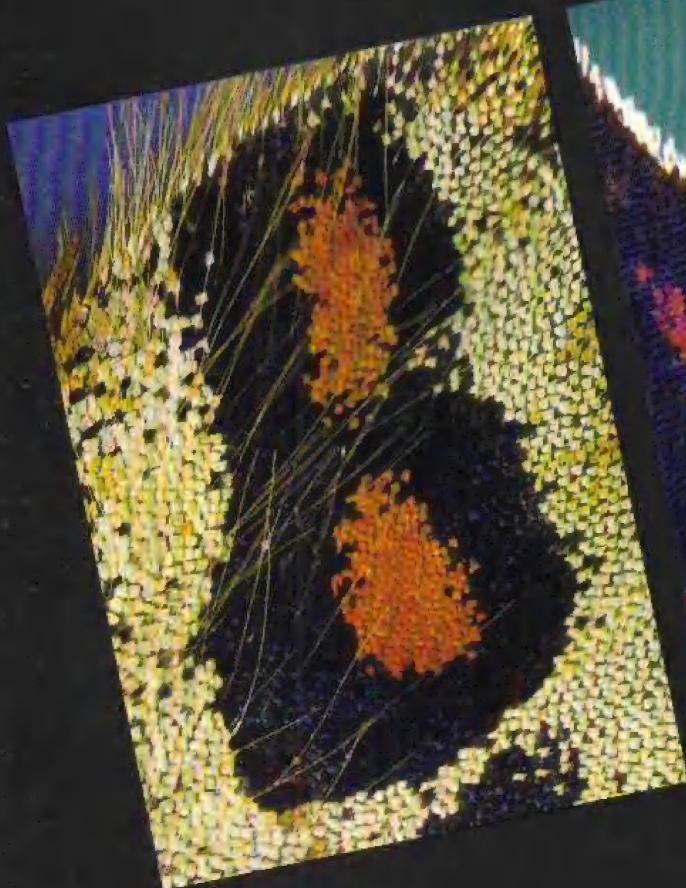
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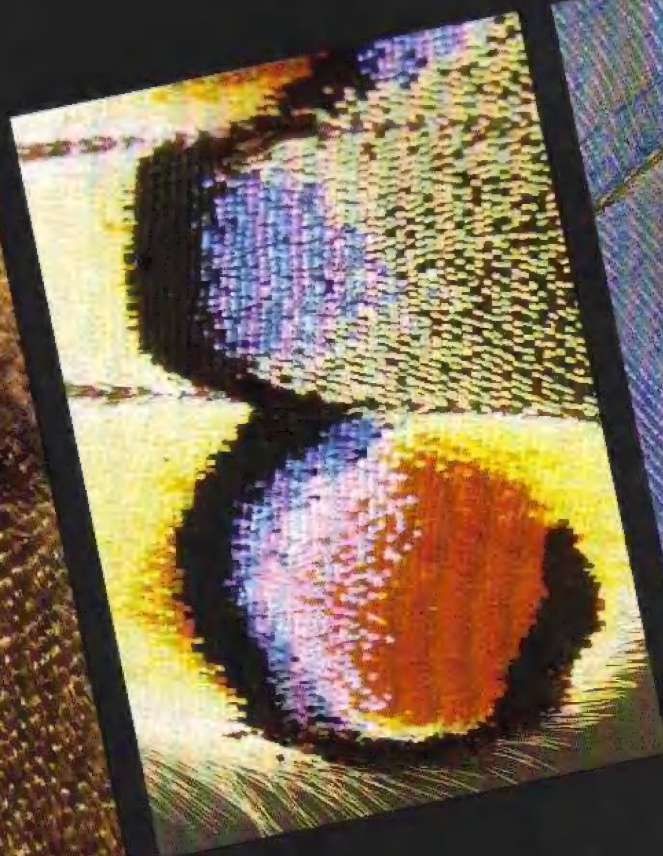
BUTTERFLY WINGS ARE AMAZING THINGS!

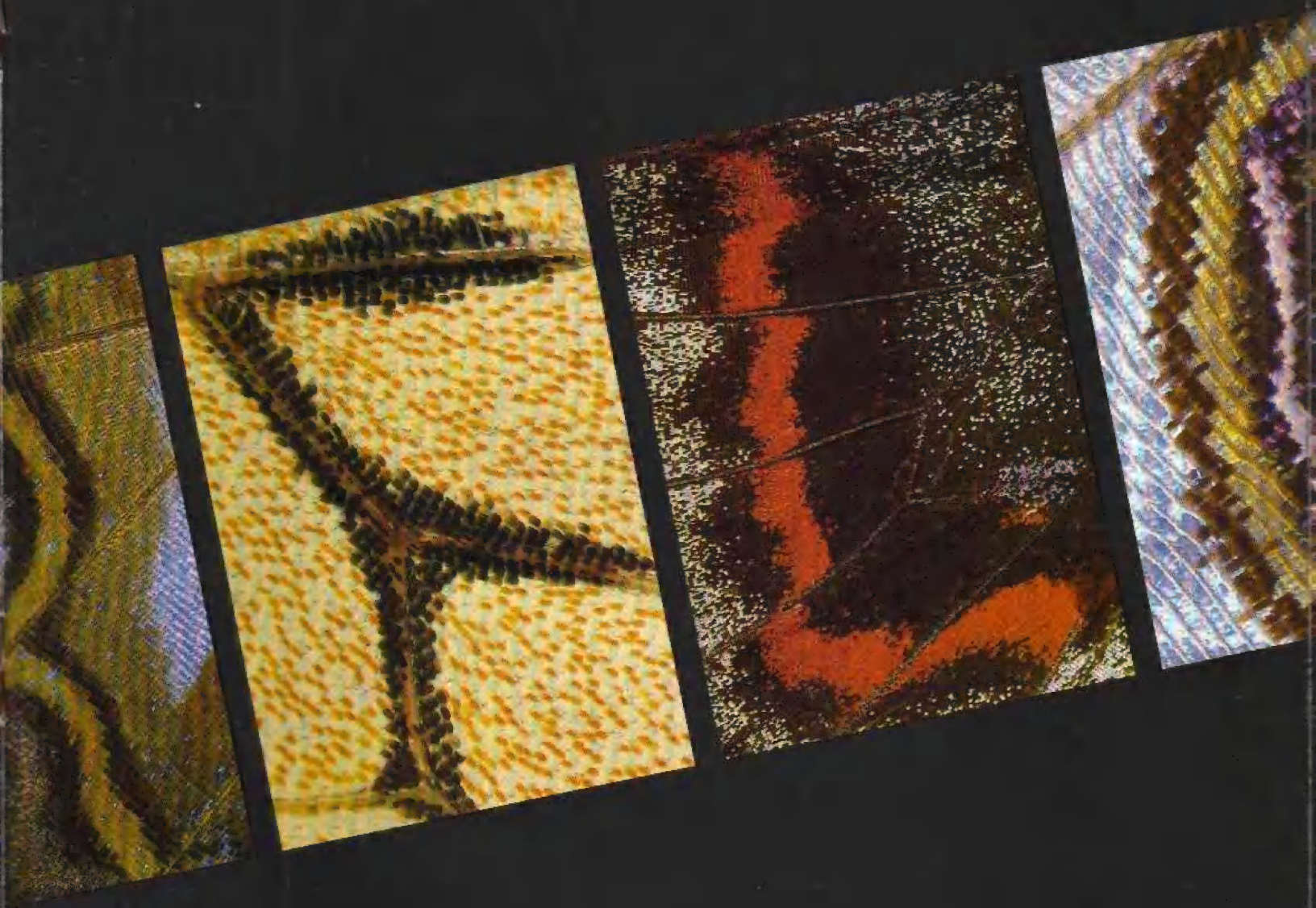


Photo by John M. Coffman











Photos by Kjell B. Sandved

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From Hair to Scale

Some scientists think that millions of years ago most butterflies were covered with hair. When they got stuck in spiders' webs, it was hard for them to pull free. But there were a few butterflies around with scales instead of hair. When *these* butterflies got caught in webs, they often flew safely away, leaving a few scales behind. Gradually, hairy butterflies died out and butterflies with scales took their place.

Besides saving butterflies from hungry spiders, scales help them find mates. Special scales on many kinds of male butterflies give off a "perfume" that attracts females. Almost all day-old male monarchs smell like wild roses, for example. Other butterflies smell like sweetbriar, heliotrope, and other flowers. One butterfly even smells like chocolate!

Color Me Warm and Safe

A butterfly's overall color is important too. Butterflies that live

in very cool places are usually dark. Their dark colors help them absorb the sun's warm rays. And since most butterflies can't fly unless they're warm, this helps them survive.

Colors—or the lack of them—help keep butterflies from being gobbled up by enemies. Some butterflies, such as the wood nymph below, are hard to spot because they have very few scales. An enemy may see what the butterfly is resting on, rather than the butterfly itself.

Some butterflies have bright color markings that warn: *Don't eat me—I taste awful!* The markings of other butterflies help them blend in with their surroundings, and enemies often pass them by.

For butterflies, colored markings can mean the difference between life or death. But for us, close-up photos of some of these markings can be fun. As you can see, they even make a great poster with a special message! 🐱



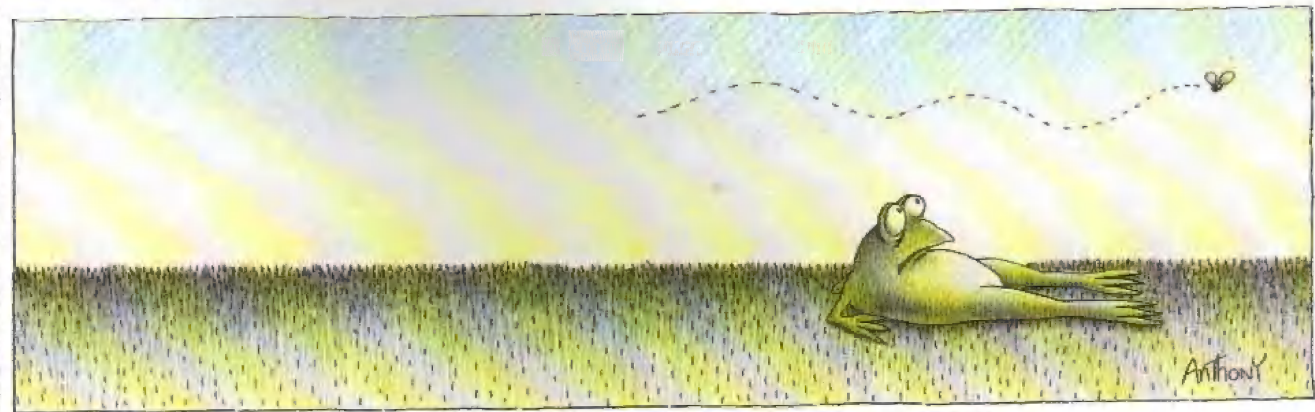
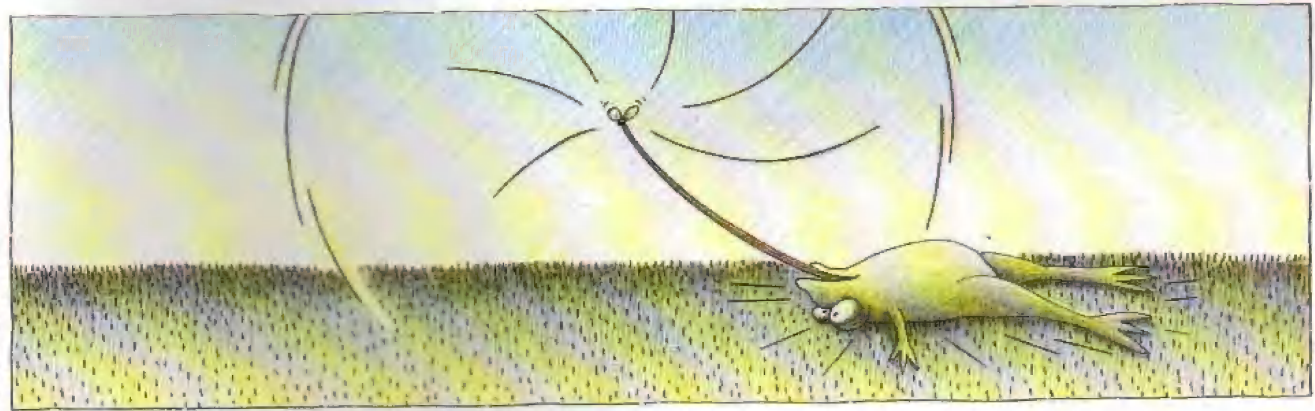
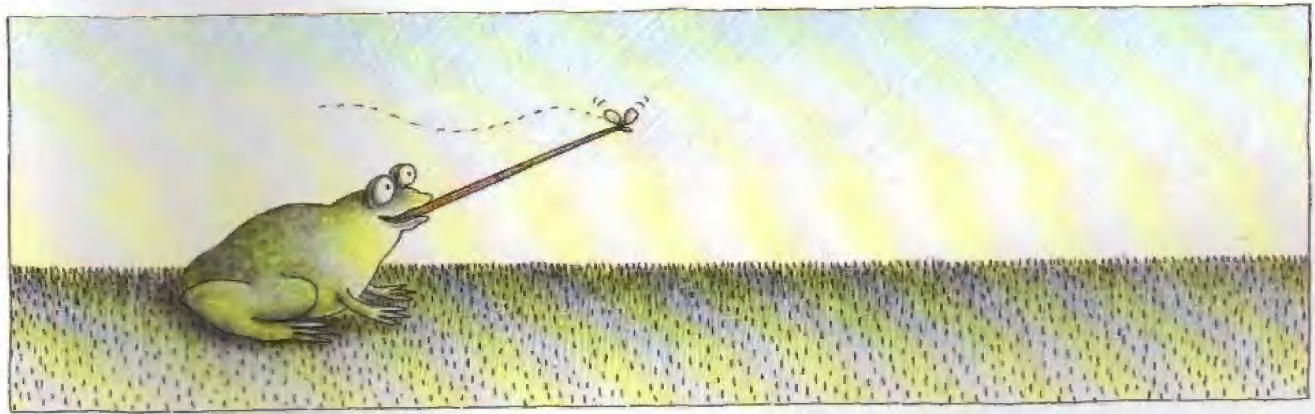
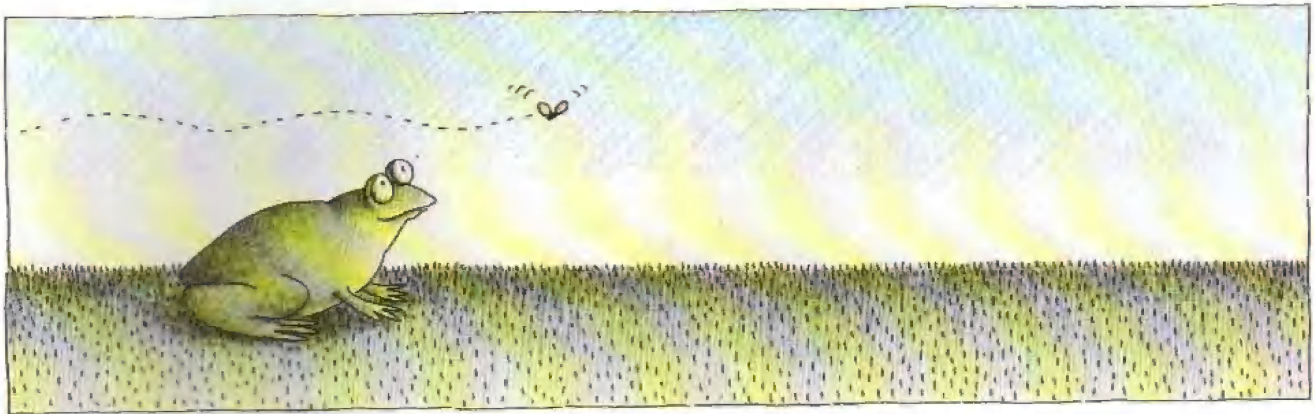
Photos by Edward S. Ross, David M. Dennis/Tom Slack & Assoc.



Most butterfly wings are covered by many scales. But others have so few that you can see through them (left). Whether there are many or few, each scale is attached to the wing with a tiny hook at the top (above). This photo shows a scale over 100 times its real size.

Critter Crackups

by Anthony Taber



Anthony

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KILLER



WHALES

They prowl the seas, catching fish and snatching seals. But are they really vicious, cruel killers?



KILLER WHALES—what a frightening name! You might think these big mammals attack and kill everything that comes near them, including people.

But we now know that killer whales are ferocious only toward their prey. They kill for food, not out of meanness.

Scientists don't know why, but killer whales don't seem to think of people as food. Divers who study them can even swim nearby without being afraid. That's why some people think *orca* is a better name for these whales. Orca comes from their scientific name and doesn't make them sound so scary. But whichever name *you* use, remember the whales *aren't* vicious, cruel killers.

KILLER COMPARISONS

It's easy to tell a killer whale from other whales. It has beautiful black and white patches on its body, topped by a triangular fin that may be taller than you are.

A male killer whale may grow to

be as long as a school bus. But that isn't even one third the size of a blue whale, which is the world's largest animal.

Killer whales are small compared to many other whales. But they have something most bigger whales don't have—large, sharp teeth and powerful jaws. Killers are also among the fastest-swimming whales. Sometimes they zip through the water nearly as fast as a race horse can run!

Every ocean of the world has killer whales. Many live near Antarctica. In North America you can sometimes see them off the Atlantic and Pacific coasts, especially where the water is very cold.

CAPTIVE KILLERS

Some people capture killer whales and keep them in tanks in marine parks. The keepers at the parks train the whales to put on shows for big crowds of people.

The park owners say that people learn to care about whales when they see them up close. But some experts say that it isn't good for these large, active wild animals to be kept in tanks in marine parks. They say these whales probably get bored or even depressed in captivity and would be better off in the wild.

Many scientists study wild killer whales without catching them. They're learning where the whales go, what they eat, and how they behave toward each other. And they're trying to discover what the whales' amazing calls mean.

This killer whale skull (below) washed up on shore. A killer whale uses its big jaws and teeth to grab fish, sea birds, or mammals such as seals and sea lions.



KILLER CALLS

Killer whales "talk" to each other with many different sounds. They trumpet, sing, whistle, and roar. These calls help the whales recognize others from their own *pod*, or group. Scientists can even tell one pod from another by the different sounds each pod makes.

A young killer whale probably learns to make the sounds of its pod by copying the adults. When older whales talk to their calves, they may be teaching them important "whale lessons."

A killer whale in trouble sends out a call for help that can be heard for miles underwater. Scientists have discovered that whales can hear another whale's cry at least 10 miles (16 km) away!

A whale also uses sound to help it "see" deep in the ocean where there is very little light. This is called *echolocation* (EK-oh-lo-KAY-shun). The whale sends out high squeals or clicking noises. The sounds bounce, or echo, off an object in the distance: a rock, a boat, or maybe a fish. When the sounds bounce back, the whale can tell how far away an object is by how long the sounds take to get back. It can probably even tell what the object is.

KILLERS' COMMUNITIES

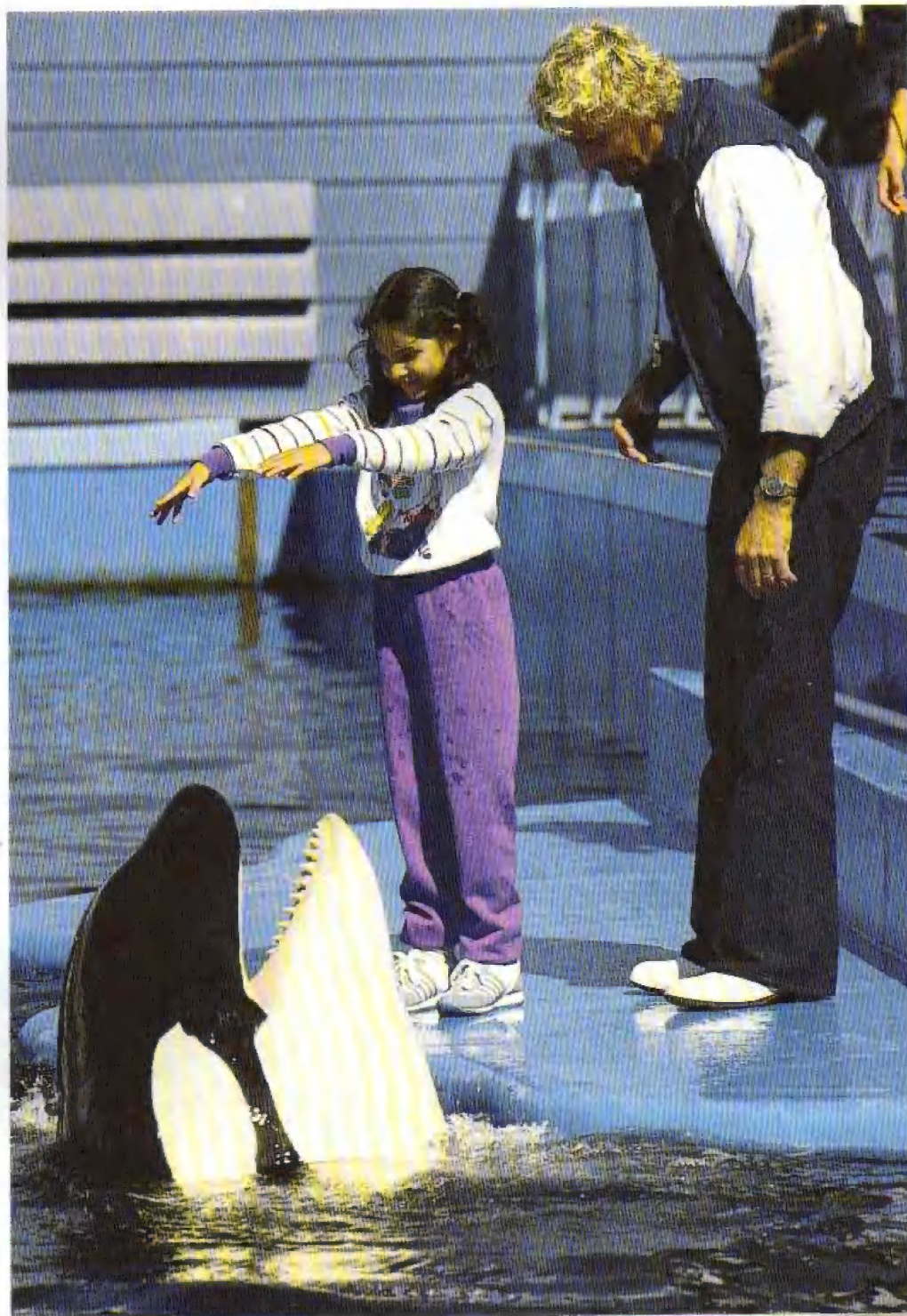
Killer whale pods are made up of family members: mothers and their young, grandmothers, aunts, uncles, and cousins. The oldest female in the pod is the leader. The others learn many important

things by following her example. Scientists think the females in a pod stay together for life.

When there is trouble, members of a pod help each other. If one is hurt or sick, others will lift it to the surface so it can breathe.

Pod members play together too. They dive, leap, and chase each

In marine parks, kids can get close to killer whales (below). Some people believe that these whales would be better off roaming the seas.







other. Often they rub against one another. This may help them get rid of dead skin. But they also seem to enjoy just touching.

KILLER CALVES

A newborn killer whale calf is longer than a tall person and weighs around 400 pounds (180 kg). That's some baby! Very soon after it is born, the calf swims to the surface. Its mother stays by its side as it takes its first breath.

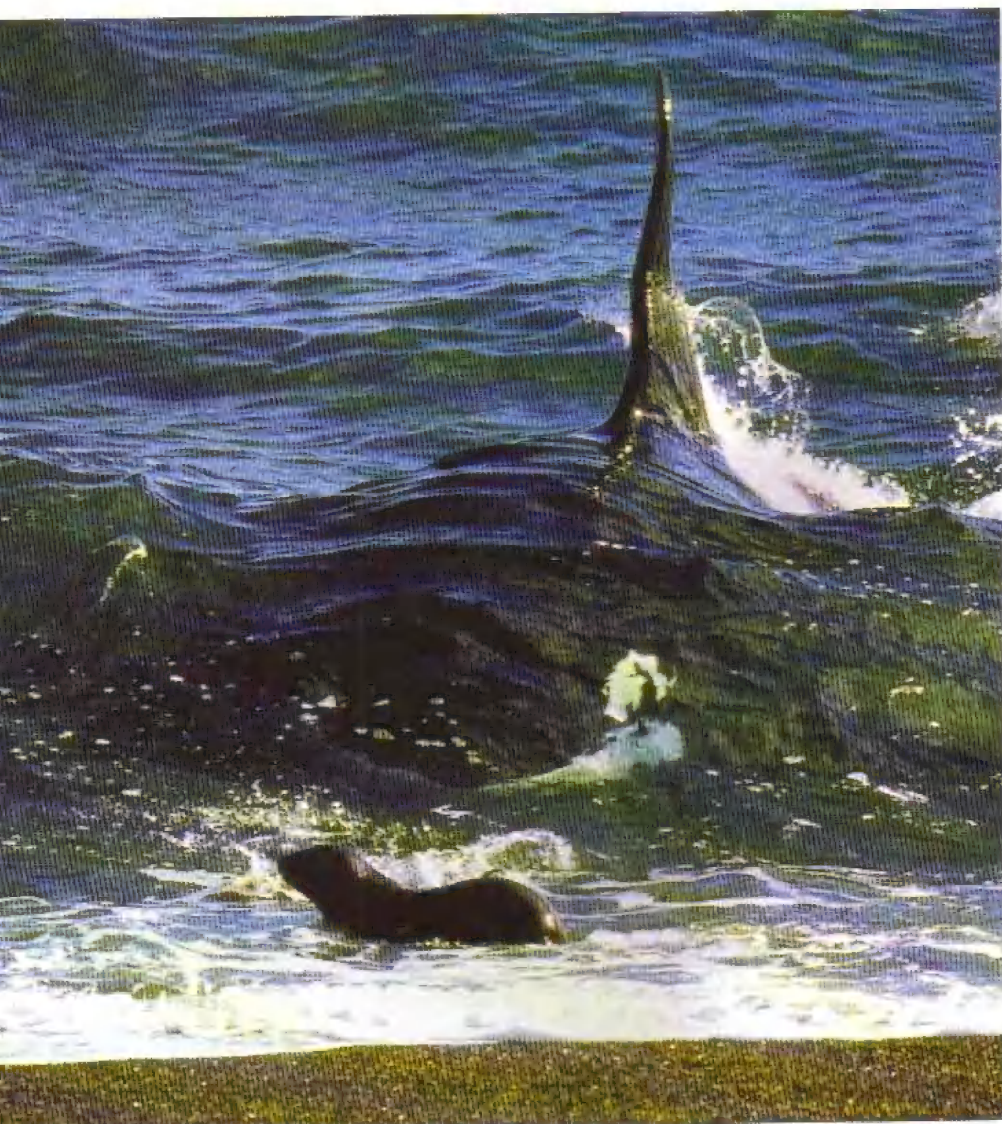
The calf has to get the right rhythm of blowing and breathing. Otherwise it may choke and sputter just as people do when they're learning to swim. It moves along underwater, holding its breath. Then it rises to the surface so that its nostril, called a *blowhole*, is above water. This blowhole is on top of its head, right above both

eyes. The calf pushes the air from its lungs out of the blowhole. Usually there is a little pool of water on top of the blowhole. The water explodes into a fountain of tiny droplets when the whale forces the air out of its lungs. Then it quickly takes another breath through its blowhole.

A killer whale calf drinks milk from its mother. But it doesn't get the milk by sucking on nipples, as most young mammals do. Instead, the milk comes out of slits on the mother's belly. Special muscles squirt the milk out of the slits when the calf nudges its mother. The milk is forced right into the calf's mouth.

Killer whales spend a long time growing up and learning from others in the pod. They don't have their own calves until about age 14.

By staying close to its mother (above), this young calf is learning some important killer whale lessons. It comes to the surface with her (left) to take a breath through its blowhole. But first it breathes out, making a tiny spout of water.



You wouldn't want to be a young sea lion (above) when a male killer whale is on the prowl. Seconds after this photo was taken, the whale grabbed the sea lion. Then he carried it off to a calf in his pod.

KILLERS' CRUNCHIES

Killer whales are big eaters. But they don't all eat the same food. Scientists have discovered that there are two types of killer whale. One type eats mostly fish. These fish-eaters travel in large pods of ten to fifty whales. The schools of fish they hunt for are often scattered far and wide. So the whales spread out until one of them spots a school of fish. Then it calls the others in its pod to join in the big meal.

The other type of whale eats sea mammals and birds such as penguins. They travel alone or in small pods of two to five whales. These mammal and bird eaters do not need to hunt in large groups to find prey. They also rarely make sounds. It's easier to sneak up on a mammal or penguin that way.

Penguins and seals often rest on small islands of ice floating in the ocean. But that doesn't save them from a killer whale. When a whale spots something to eat on the ice, it charges up and rests its belly on the edge of the ice. With the whale's weight pushing down on one side of the tiny ice island, the animal on it just slides right off into the water!

Sometimes an adult killer whale catches food for a calf. The male killer whale shown at left is swimming close to shore. He's looking for food for a calf in his pod. The calf and its mother are probably waiting in deeper water. With a *splash* and a snatch, the male grabs a sea lion pup. He may keep the young sea lion alive for a while so he can show the calf how to kill an animal. That is just one of the many lessons a killer calf learns from other whales in its pod.

People hope to learn a lot more about these great sea creatures too. But one thing we already know for sure: Unless you're a fish or a seal, the scariest thing about a killer whale may be its name! 🐳

Written with the help of Michael Bigg, Barbara Steiner, Terry Tempest, and Brooke Williams.

Dear Ranger Rick,

The One That Didn't Get Away

One day my family and I went fishing. My dad, mom, and brother were all catching fish, but I wasn't.

My mom caught a little blue catfish. She put the fish on the end of my line. Then I put my line back into the water to pretend I had caught something. After a while my dad said we should leave. Right then my pole jerked real hard. I tried to pull my line in but I couldn't. My brother helped me, and we finally pulled a big fish out of the water. It turned out to be a 21-pound [9-kg] blue catfish that had swallowed the little one on my line. It was the biggest fish we'd ever caught!

Chris Thomas
Monette, AR

Congratulations, Chris!
Sounds like a great day. R.R.

An Important Lesson

I have a very important story to tell all kids who read *Ranger Rick*. Something hap-

pened to me the other day that I will never forget.

I wanted a pet bird very much. So I talked my grandpa into getting a bird out of a nest in a tree. The bird was a sparrow. I was so excited to get it that I almost cried. Just then my mom and dad came along. My mom said I couldn't have the bird, so I *did* start to cry. Finally she let me keep it, but she said it would die. I told her I was sure it wouldn't.

We took the bird home, and I fed it and took care of it. Then one morning my dad woke me up and told me my bird was sick. He said it wouldn't live, but I didn't believe him. After an hour the bird died. I felt terrible.

I will never get a baby bird out of a nest again, because it hurt so much to see the bird die. I learned a lesson: Don't ever take a baby animal out of the wild and try to raise it.

Kelly McCrary
Olympia, WA

I'm sorry about your sad experience with the sparrow, Kelly. No wild animal makes a good pet. But there are plenty of domestic animals that do. If you and my other rangers would like to find out about them, write for a free copy of "How to Pick a Pet"; Dept. HP; National Wildlife Federation; 8925

Leesburg Pike; Vienna, VA 22184-0001. Please remember to include your name and address. R.R.

A Squirrel Watcher

I've been getting your magazine for eight years. I really love it. I still have the first one I ever got. It has a raccoon on the front of it.

I'm in the Cub Scouts and we have to earn badges by doing different projects like washing a car. Right now I'm earning my Naturalist Badge by watching squirrels in my backyard. They are quite interesting to watch.

I can tell one of the squirrels from the others because of all his habits. For instance, I know where he likes to eat his food. I call him Flea Bag because the first time I saw him he was scratching a flea!

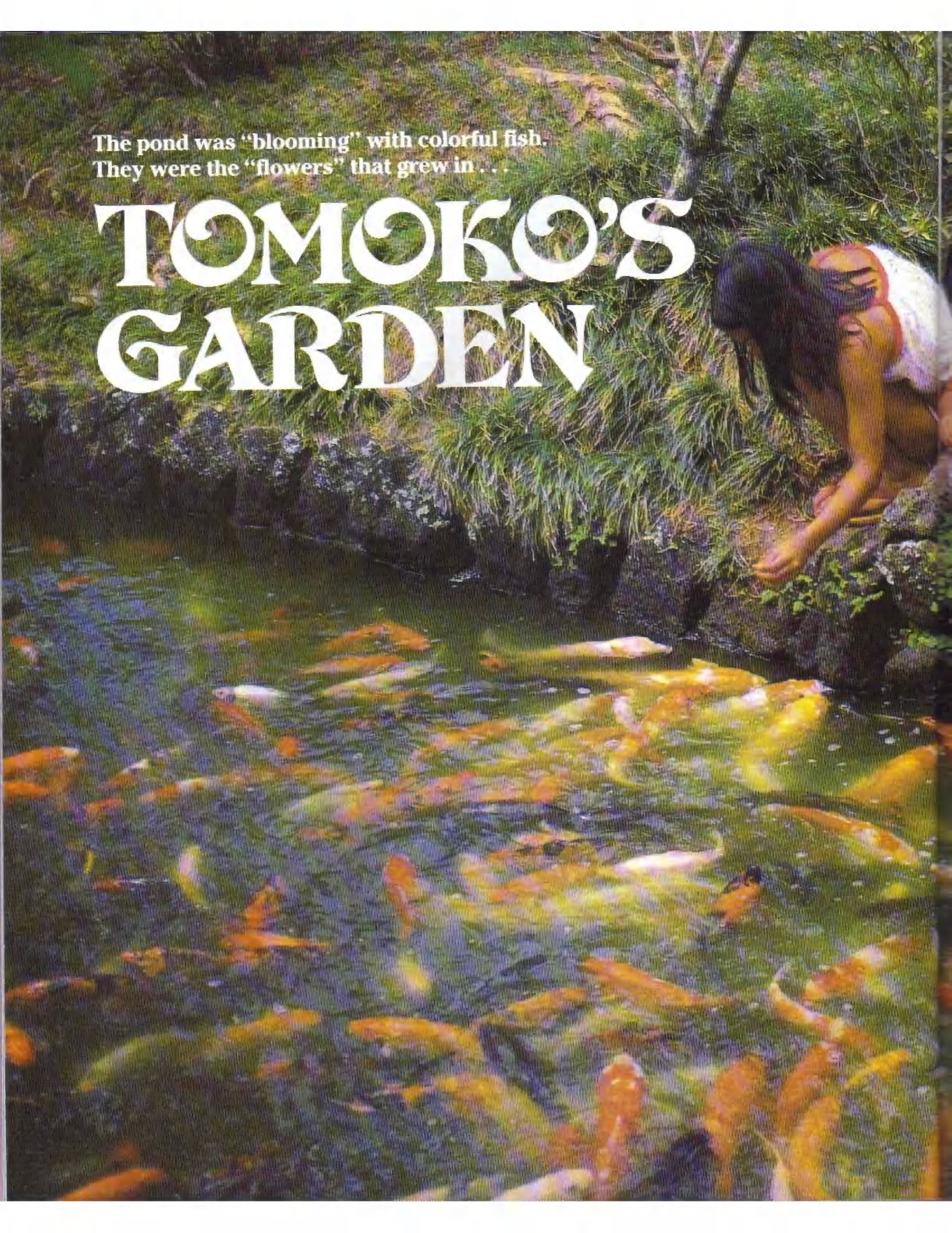
Garth Davidson
Evanston, IL

Good luck with getting your Naturalist Badge, Garth. I'm sure Flea Bag is glad to help! R.R.



The pond was "blooming" with colorful fish.
They were the "flowers" that grew in . . .

TOMOKO'S GARDEN



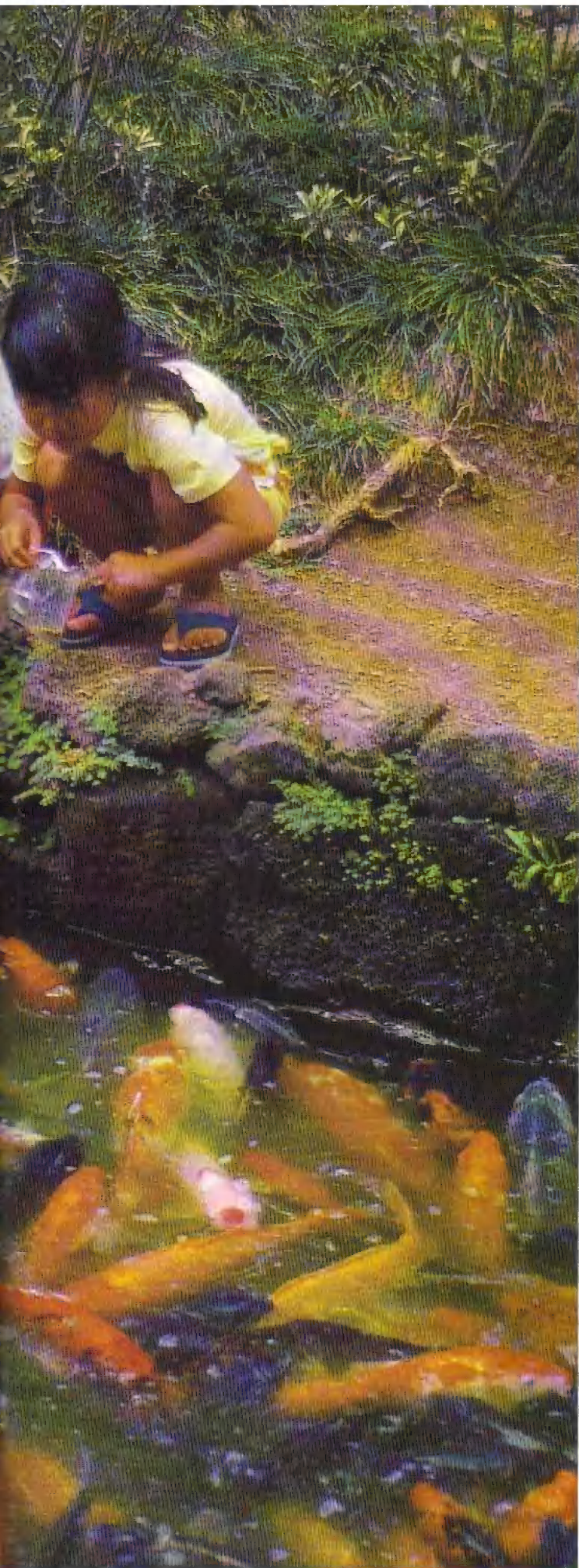


Photo by Dr. E.R. Degginger

by Diane Swanson

"Do you want to help me feed my garden?" Tomoko asked. "It's lots of fun."

"Feed? . . . Oh, you must mean *fertilize* your garden," I said.

"No," laughed Tomoko, "I mean *feed* it. Come see."

This was my first visit to Tomoko's house, during my first visit to Japan. I followed her across the room and out a sliding glass door into the backyard.

There were no flowers. But there was a pond that nearly filled the small fenced yard. Little stone statues stood in the sparkling water. And arching across the pond was a bright red and gold bridge.

"*This* is my garden," Tomoko said proudly, "my garden of *koi* [rhymes with boy]."

In the shallow pond I could see many brightly colored fish—red, yellow, blue, and gold. Others were snowy white with red or black patches on their heads and backs. As we looked down on them, the fish *did* seem as colorful as . . . well . . . as flowers in a garden.

"They're really beautiful. What did you say they're called?" I asked.

"Koi," said Tomoko. "They're colored carp." She explained that in the wild, carp aren't nearly as colorful. They blend into the streams and lakes where they live. But people also raise special kinds of colorful carp called koi. In Japan, many people keep koi in ponds like Tomoko's. Each kind of koi has a Japanese name that usually describes its coloring.

Tomoko picked up a bag of vegetable bits from a shady corner of the yard. Then she knelt at the edge of the pond and swished one of the bits gently in the water.

"Watch, here comes the *Hi-goi*," she said, as a bright red fish swam quickly toward us. It



Photo by Tom Myers

These fish, called koi, have learned to come to the surface to be fed by hand. Koi are often entered in shows that are like beauty contests for fish. A winning koi might be worth more than \$100,000!

came to the surface and ate the food right out of Tomoko's hand.

"Wow! How did you get it to do that?" I asked in amazement.

"Oh, koi can become very tame," she said. "Do you want to feed one?"

Tomoko handed me some vegetable bits from the bag.

"Kneel here, next to me," she said. "Now swish the food gently back and forth in the water. That's it. Oh, look. It's the *Ki bekko*."

I held my hand very still as a sunny yellow koi with big black patches came swimming up. *Snatch!*—it took the food I was holding.

"Quick," said Tomoko, handing me another bit. "The *Shusui* koi is hungry too."

As soon as I put my hand back in the water, the *Shusui* koi came to feed. "Hey, this one is really different from the others," I said. "It has a line of big scales down the middle of its back."

Tomoko nodded. "Some koi have big scales on certain parts of their body," she said. "And some of them have such tiny scales that

they look as if they have none at all."

"They're really neat," I said, sitting back to admire the swirl of colors in the pond. "Where do you get them?"

Tomoko told me that Japan has lots of fish farmers who breed many special colors and kinds of koi. They sell them to people for their ponds and aquariums. Koi breeding has gone on in Japan for hundreds of years.

"I hope you can see a koi show while you're here," Tomoko added. "They're very popular. Owners bring their most beautiful koi to compete for ribbons and trophies. Sometimes the trophy is bigger than the person who wins it!"

We could hear people talking inside the house now. (My family had arrived to pick me up.) As we stepped inside, I said to my sister, "I was helping Tomoko feed her garden!"

"What do you mean '*feed her garden*'?" she asked, looking as though I had gotten things all mixed up.

Tomoko and I looked at each other and grinned. "Oh, you'll see," I said. 🐡

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Not-so-Little SQUIRT

Based on a story
by Loreena Thiessen

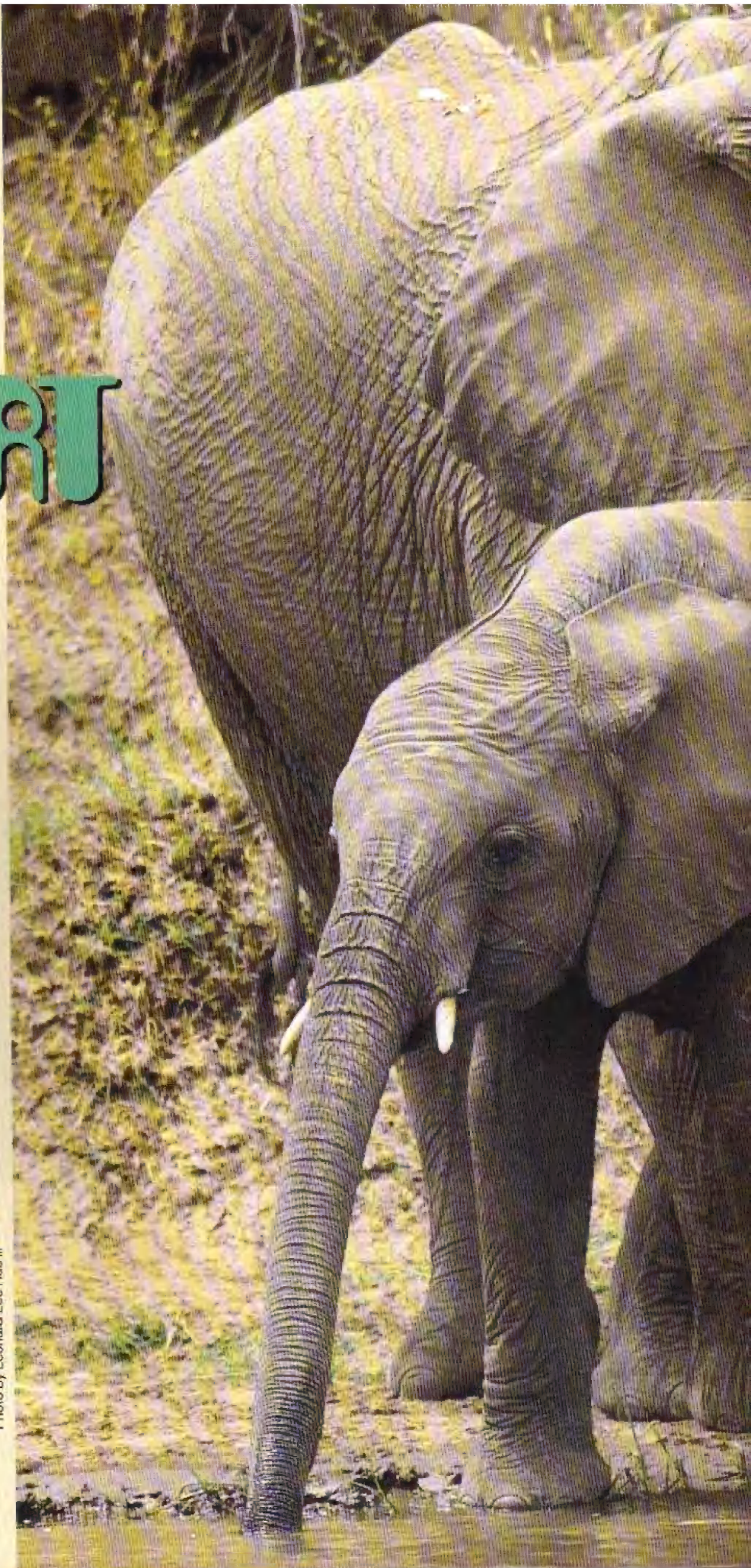
Squirt lazily scratched his back on Big Mama's chin. He was a five-year-old African elephant calf, and he itched.

Already the morning was growing hot, and it was time for a bath. Squirt's mother, Big Mama, must have been ready for one too. Slowly flapping her large ears, she ambled off toward a nearby waterhole.

The eight other elephants in the family group began to follow Big Mama. As the oldest female elephant, she was their leader. Where she went, they went.

Reaching the waterhole, Big Mama looked around carefully. She needed to find a place where the youngest calves could get down the steep sides easily. But Squirt and the other older calves didn't need any help. They plunged down the bank and splashed into the welcome water.

Photo by Leonard Lee Rue III





Big Mama moved away from the mess churned up by the bathers. She stretched out her trunk like a long, thick straw and began to drink. *Sip and squirt . . . sip and squirt.* With a steady rhythm she filled her trunk, lifted it to her mouth, squirted the water in, and dropped her trunk back down for another sip. It would take nearly 40 gallons (150 l) to satisfy her thirst.

The other elephants drank like this also, all except for the smallest calves. They would have to learn how to use their trunks as straws.

Near Big Mama, a small calf slapped the water with her trunk. A spray of water flew through the air, sprinkling Squirt. He squealed in delight, then threw himself deeper into the water. Like a fat little submarine, Squirt plunged beneath the surface. His trunk waved like a leathery periscope. He popped up, shook his ears, blinked his eyes, and looked around for Big Mama. She was now taking a mud bath.

Squirt sloshed toward his mother. Joining her at the

Squirt and his mom (left) are African elephants. Soon they will have to go look for food or find shade from the hot sun. But for now, it's quiet time at the waterhole.



Elephants love to play in the water. Squirt uses his trunk as a snorkel (above) when he ducks his head under. Big Mama uses hers as a hose (right) to give her son a playful squirt.

waterhole's edge, he first kneeled down clumsily. Then he plopped on his side in the gooey mud.

Squirt squirmed back and forth. He kicked his stumpy legs and rolled over onto his other side. He rubbed himself into the mud from trunk to toes. In no time the mud coated Squirt's skin. It would help protect him from the hot sun. And it would also help to keep off insect pests.

Standing up, Squirt turned toward his mother just as she turned toward him. With a playful *twoosh*, she sprayed

her calf with a trunkful of water. But playtime was now over, and Big Mama was hungry. She led off once again, this time toward a group of acacia (uh-KAY-shuh) trees. The trees' seed pods were a treat for the elephants.

With the sensitive tip of her trunk, Big Mama picked the pods and put them into her mouth. Squirt couldn't reach the pods in the tree, so he ate them from the ground.

Meanwhile, other elephants were after the bark. To get at it, they used one tusk at a time to chisel into the tree. Then they ripped off the bark as easily as peeling a banana. This made good eating for the elephants. But it left the trees in tatters, often killing them.

Squirt wasn't interested in bark. He was ready to play again! He chased a butterfly. He threw sticks with his trunk. He butted heads with an older brother. His squeals and trumpets filled the air as he charged make-believe objects.

Then he shuffled back to Big Mama for a quick drink of milk. She still let him nurse from time to time. But soon a new brother or sister would be born, and Squirt would be made to stop nursing.

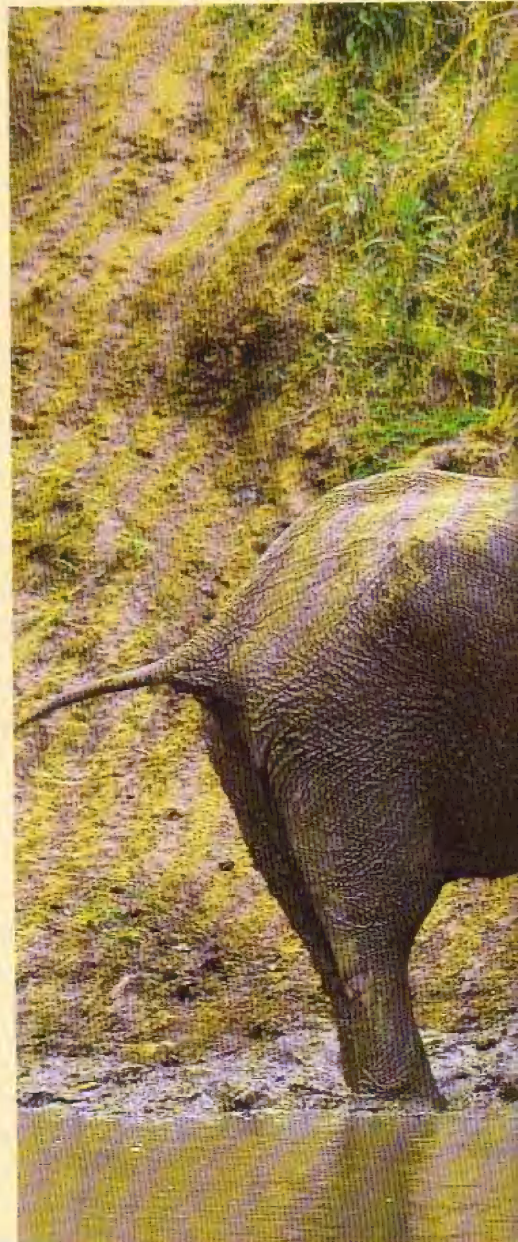
For now, he nursed eagerly. Then one of Squirt's small tusks poked Big Mama in the side. She stepped away from her youngster, but he wasn't

too upset—it was time for a rest anyway.

One by one the elephants moved into the shade under the acacia trees. The calves found places to lie down, but the adults dozed standing up. They would spend the hottest part of the day here, hiding from the sun. Squirt munched on a big leaf. Then he settled down to sleep.

In what seemed like no time, he felt a nudge against his side. Squirt opened his

Photos by Phil & Loreita Hermann; John M. Coffman



eyes to see Big Mama standing over him. She was using a front foot to wake up her calf. Big Mama was thirsty again, and she could smell the river three miles (5 km) away.

Giving Squirt one last "get up" shove with a foot, Big Mama moved off in a steady, lumbering gait. The other elephants began to move too. Squirt got up and hurried off after his mother.

The late afternoon heat still pressed around the elephants

like a warm blanket. The bright light of the day faded to a dull yellow haze. And now the river was just ahead, across a stretch of rocks.

With the tip of her trunk, Big Mama tested her footing. She carefully touched each rock, checking each step. Then she was at the river's edge.

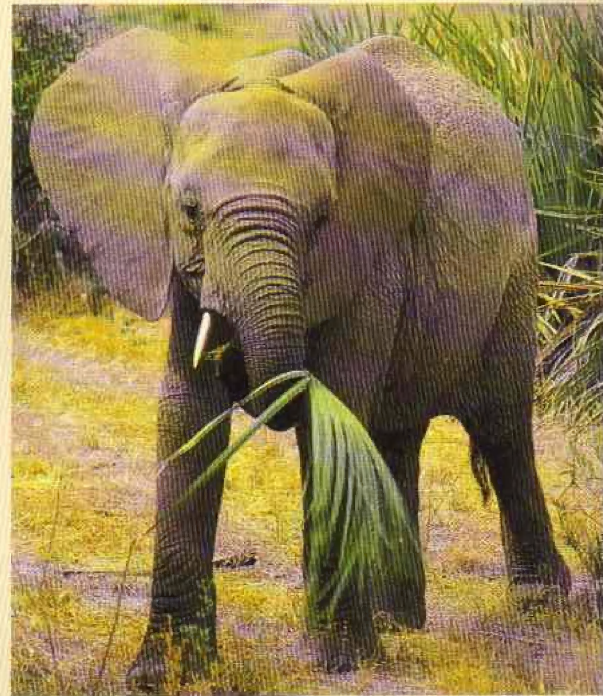
She drank. Then, using her trunk as a shower hose, she blew cooling water across her back. She sprayed water over her large ears, in which there

were thousands of tiny blood vessels. She spread her ears like sails in the breeze, which helped cool the blood in them. And as the cooled blood flowed down into her huge body, she began to feel cooler all over.

In the meantime, Squirt had found a strip of sandy beach. As he had often seen older elephants do, he pushed together a small mound of sand with his trunk. When there was enough, he pushed the sand








Squirt's family escapes the heat by resting in the shade (left). One "aunt" raises her trunk to sniff for enemies. But Squirt (above) isn't worried about heat or danger. He's too busy eating!

onto the coiled tip of his trunk with a front foot. Then he threw the sand up over his back as if it were a handful of refreshing powder.

Big Mama showered herself with sand too. It filled the cracks in her skin and would help keep insects from biting her during the night.

Squirt wandered back to his mother's side. He wouldn't be on his own for a few more years. But day by day, he was growing up. Squirt was not quite so little anymore. 🐘

Photos by Dr. E.R. Degginger; Harold Harris/Photo



A nest tucked high in a pine tree is home for two baby blue jays. But for three young pileated woodpeckers (front cover), home is a hole in the trunk of a palm tree.

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